of Hasegawa in further in view of Suga et al. (U.S.P. 5,739,808). Claim 17 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Farwell et al. in view of Hasegawa in further in view of Mizutani et al. (U.S.P. 6,326,726). Claims 18, 19 and 29 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Farwell et al. in view of Hasegawa in further in view of Yushiya (U.S.P. 5,917,621). Claims 20, 21 and 23 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Farwell et al. in view of Hasegawa in further in view of Yushiya in further view of Mizutani et al. Applicant respectfully submits the following arguments in traversal of the prior art rejections.

Turning to the newly cited art, Farwell relates to a display apparatus that converts multi-bit image data into single bit data for a single bit LCD-driver. Each pixel includes multiple sub-pixels of different color, as shown by Fig. 8. Fig. 8 illustrates sub-pixels of a pixel 101 comprising red, green, and blue. In order to achieve representation of different colors, Farwell employs time modulation of a large group of pixels over several frames of data. The pixel patterns spanning a large area are shown in Figs. 7a-7c, for example. The averaging of perceived light emissions over a larger area is an important aspect of being able to achieve a large number of color representations using the single bit LCD driver. Col. 13, lines 13-20. Relatedly, in order to prevent contouring in the color representation, the data provided to the sub-pixels includes a gray scale pattern to produce the data, and an inhibiting code imposed to pixels adjacent thereto.

Hasegawa relates to an FLCD type of display whereby the display state of an image can be preserved with the application of an electric field. Even when the field becomes extinguished,

the orienting state of the LCD can be maintained. Col. 1, lines 43-61. As an aspect of operation, binarization errors undergo diffusion to adjacent pixels. Col. 5, lines 55-62.

The Examiner contends that the combination of Farwell and Hasegawa teaches each feature of independent claim 1. Applicant submits that the rejection is not supportable for at least the following reasons.

First, the rejection is internally inconsistent. Though the Examiner contends that Farwell and Hasegawa teach the features of claim 1, the Examiner refers to Suga (page 4, second full paragraph; page 6, first full paragraph, page 7, last full paragraph) in support of the rejection of each independent claim. In view of this ambiguity, the rationale underlying the rejection is not clearly stated, such that the rejection should be withdrawn.

Second, if one were to understand that the prior art rejection stands over Farwell and Hasegawa, the references may not be properly combined. In this regard, the Examiner has failed to provide any rational for combining Farwell and Hasegawa. Applicant further notes that Farwell and Hasegawa teach away from their combination with each other. To the extent that the Examiner relies on Hasegawa for teaching a monochrome display (see col. 5, last full paragraph), such a monochrome output is inconsistent with the multiple color (10,000) combinations contemplated by Farwell. See col. 7, lines 7-17. Modifications that undermine a principle of operation of the reference are not supportable.

Third, Farwell clearly fails to teach spatially adjacent cells of a pixel which output color of the same color. The elements 101a, 101b, 101c of Farwell clearly are different colors. The

Examiner cannot use Hasegawa to make up the deficiency of Farwell for the reasons discussed above.

Fourth, Farwell clearly fails to teach that each of the cells expresses tone in three or more levels. Since each sub-pixel of Farwell is driving by a single bit LCD driver, the sub-pixel has only two values on or off. The Examiner appears to rely on the different duty cycles of Farwell in order to teach multiple gradations. However, such gradations occur over multiple pixels, and not a single pixel to provide gradations in the aggregate. Each sub-pixel is not able to express three or more levels.

Fifth, the Examiner's contention that Farwell teaches that the average of subpixel luminance within an element corresponds to the luminance of the picture element is incorrect. The averaging discussed by Farwell corresponds to an average over a large number of pixels. It is the widespread area and time modulation that permits the perceived number of color combinations to be increased. Within each picture element, each cell is modulated on and off according to a duty cycle for that picture element and several other picture elements. The value of the subpixels for the picture element does not necessarily correspond to the luminance for the picture element.

Sixth, the Examiner appears to suggest that Farwell and Hasegawa may be combined for purposes of increasing display speed. It is noted that Hasegawa provides an increased display speed because it maintains some unchanged pixels in a fixed state and adjusting only those pixels that change. Col. 1, line 63 to col. 2, line 2. By contrast, Farwell relies on time modulation over

a short succession of time, leading a change to multiple pixels, as opposed to only those that remain unchanged. The principle of image representation between Farwell and Hasegawa teach away from their combination with each other for this additional reason.

For all the above reasons, claim 1 is patentable over the combination of Farwell and Hasegawa. Claims 13 and 38 are patentable for analogous reasons over the cited combination due to improper combination.

With further regard to claim 13, this claim describes that at least two of the cells have maximum output levels that differ from one another. Because Farwell relates to a single bit LCD driver per cell, the maximum level will be the same for each R, G, B cell. Claim 13 is patentable for this additional reason.

With further regard to claim 38, this claim describes that the sum of the output luminance of all cells within each picture element correspond to the output luminance of the element. However, the Examiner has not indicated how this feature is taught in the art. Rather, the Examiner merely duplicates language regarding "average of the output luminance" that is recited in claim 1. (Office Action, page 6, lines 16-17). Claim 38 is patentable for this additional reason.

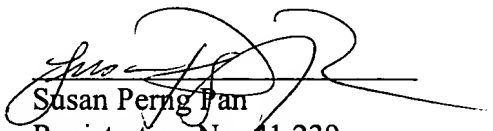
The remaining claims are patentable based on their dependency. The additional prior art references of Suga, Yushiya and Mizutani do not make up for the deficiencies of the prior combination.

With further regard to claim 2, this claim describes that the luminance of the cells is substantially uniform. However, in view of the variability of the time modulated signal in Farwell, Applicant submits that the Examiner's reliance on the inherent uniformity is not supportable. Claim 7 is patentable for similar reasons.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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